Building Number: 15

Original Name: **Bowling Alley**

Est. Year of Construction: **1961**

General Data

- Square Footage: 1,987
- # of Floors: 1
- # of Rooms: 4
- # of Bedrooms: 0
- # of Bathrooms: 2
- # of Kitchens: 0
- # of Laundry Rooms: 0
- # of Shower Rooms: 0
- Basement or Crawl Space? Slab-on-grade
- Ceiling Heights: 8'-0" in entry
  10'-0" throughout rest

View from southeast.

History and Future Plans

Building #15 was originally used as a two-lane bowling alley. Small in size with minimal fenestration, NPS anticipates use this building as recreation, assembly, exhibit or studio space.

Interior, looking north.

Detail of soffit at northeast corner.

Exterior Conditions

- *Roof*

  Flat roof is in **poor condition**. Soffits may be rotted; advise replacement of all soffit panels.

- *Wall*

  Exterior is constructed of painted concrete masonry units (CMU). **Condition is fair**, *but needs repointing. Some racking cracks.* Advise 150 SF to be repaired and waterproofing throughout.

- *Trim*

  Wide metal fascia trim is in **good condition**. Wood at low entry pavilion in **fair condition**. Recommend replacement of 20 LF of wood trim and repair soffit.

- *Foundation*

  The foundation of Building #15 is slab-on-grade in **good condition**.

Framing

Roof: Flat. 2 x 10 joists @ 16' O.C.
Wall: CMU in **fair condition**. Exterior buttresses @ 24" O.C.
Floor: Concrete slab-on-grade in **good condition**.

Life Safety

The two means of egress from Building # 15 are in **fair/poor condition**. Advise that all doors be replaced. One step up to main entrance - not handicap accessible.

Interior Conditions

- *Ceiling*

  Interior ceiling is in **poor condition**. Leak in roof has damaged interior paint finish and acoustic ceiling tile (ACT).

- *Wall*

  Painted interior finish is in **fair/poor condition**. *Paint is* peeling due to water damage from roof leaks. Advise refinishing of all interior CMU surfaces. Wood paneling in bathrooms is in **fair/good condition**.

- *Trim*

  All baseboard, door, and fascia trim is in **fair condition**. Advise that all pieces be refinished and replace missing baseboard.

- *Floor*

  Floor covering includes vinyl-asbestos tile (VAT) in the three ancillary spaces. Carpet covers the main space in front of the two wood lanes. Both finishes are in **fair condition**, but replacement is recommended. Concrete slab is missing (12") and raw-edged along the south wall and needs to be infilled and repaired.

Windows

Building #15 has 1 large, fixed window that has been boarded up. Replacement is recommended.

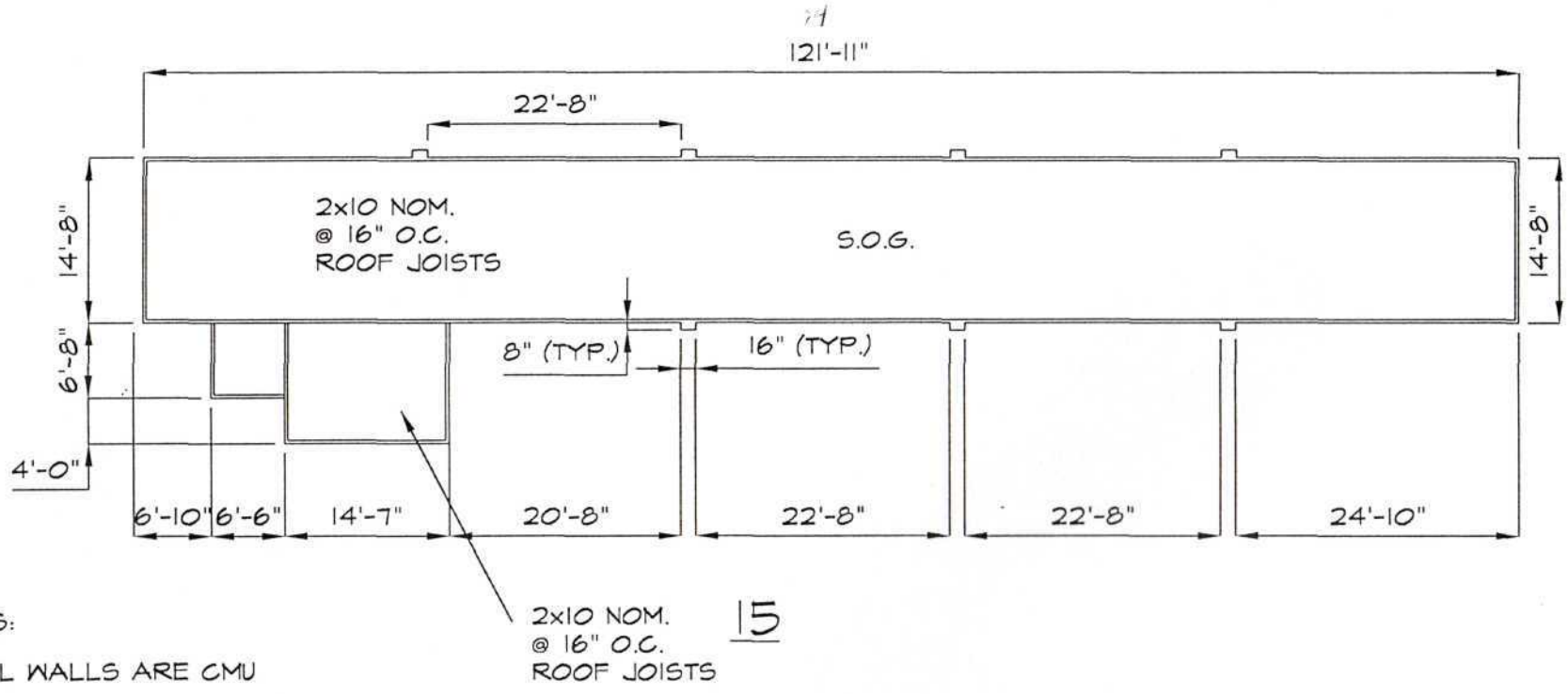
Doors

Interior doors are hollow core with bottom louvers in **fair/good condition**; refinishing advised. Three wood *flush doors to exterior in* **poor condition**. *Major mildew* damage, lack of hardware and rotted trim. Replacement advised.

Reusable Fixtures

Bathroom fixtures are in failed condition. However, 2 *lavatories may be refurbished with new hardware, etc.*; refer to Mechanical/Electrical/Plumbing section.

Building Number: 15



NOTES:

1. ALL WALLS ARE CMU
2. THE WALLS MUST BE WATERPROOFED AND THERE ARE SOME CRACKS THAT MUST BE REPOINTED.
3. FLAT ROOF

Building 15

A. Building Classification
Existing Bowling Alley is assumed to be A-3 assembly use, a category including galleries, museums, lecture halls without fixed seats, libraries and recreation centers. Alternative proposals for conversion to studio space (B) or continued use as bowling alley both anticipate occupancy by fewer than 50 persons (i.e., assembly use provisions would not be applicable).

B. Occupancy and Fire Separations
Per 302.1.1, boiler and furnace rooms require 1-hour separation or an automatic fire suppression system.

C. Type of Construction
Type 3B, masonry bearing wall building with wood-framed roof assumed to be unprotected. Per Table 602, fire resistance rating not required for roof construction.

D. Floor Area
1,987 sf < 14,400 sf max. allowed for 3B construction, per Table 503.

E. Height and Number of Stories
1story; conforms to 3-story/40' max. for B use (Table 503).

F. Occupancy
Proposed conversion to B office use results in change in Hazard Index of –3; Chapter 34 provisions are applicable.

Maximum floor area allowance is 100 gsf per occupant for business areas. Maximum floor area allowance for bowing centers is 7 nsf, but Table 1009.1.2 provides for the allowance of 5 persons for each lane, including 15 feet of runway. 20 max. occupants for shop space; 10 for two bowling alleys.

G. Exiting Requirements
Existing one-story building has two single-leaf exits. Per Table 1009.2, for B use, egress width of doors, ramps and corridors per occupant is .2" without sprinkler system, .15" with sprinkler system. Existing egress widths are adequate for 10-20 occupants.

H. Loading Requirements
Slab-on-grade floor. Refer to plan diagrams for structural information.

I. Accessibility
Main entrance is one step up; must be refurbished or adapted for universal accessibility. New accessible toilets, water fountain, etc. required.

BUILDING #15: REQUIRED ARCHITECTURAL AND STRUCTURAL REPAIRS

1. Repair/replace framing and sheathing	150	sf
2. Remove and replace damaged soffits	340	lf
3. Install aluminum roof edge (cant, nailer, flashing)	340	lf
4. Cut & repoint, repair damaged CMU masonry	150	sf
5. Remove and replace exterior doors, hardware	3	ea
6. Spray-apply cementitious waterproofing	3,000	sf
7. Remove windows and replace with metal-clad wood windows	1	ea
8. Repair and recondition window sill, lintel; paint	1	ea
9. Install new single-ply membrane roof with 1-1/2" polyisocyanurate insulation	2,500	sf
10. Install batt insulation/gypsum wallboard at walls	3,000	sf
11. General interior cleanout, mildew treatment	1,987	sf
12. Patching and floor, wall and ceiling finishes (gfa)	1,987	sf
13. Repair/replace/paint interior doors & trim	1	job
14. New toilet and mechanical room enclosures, toilet accessories	1	job
15. Refurbish main entrance for universal accessibility (path, ramp)	1	job

IV MECHANICAL, ELECTRICAL, FIRE PROTECTION AND PLUMBING REPORTS – BUILDING NUMBER 15

A. HEATING, VENTILATING AND AIR CONDITIONING

1. *Existing Conditions*

a. Heating Media
   1) Heating system media provided from aboveground low-pressure steam distribution system that has been removed from inactive boiler plant.

b. Heating Distribution
   1) Underside of structure heating and ventilating unit with distribution supply air ductwork and ducted diffusers to bowling alley and toilet rooms.

c. Ventilation
   1) Large wall mounted exhaust fan at end of bowling alley, however has been blocked up.

d. Alley Heating
   1) Large "Dunham Bush" propeller steam unit heater at end of bowling alley with discharge air to alley center area.

e. Office
   1) Office provided with transfer air from bowling alley, no control of heating.

f. Controls
   1) Wall mounted Honeywell electric controls for heating and ventilating of alley space.

g. Heating Return
   1) Condensate return piping inactive.

h. Toilet Exhaust
   1) Toilet exhaust fan.

2. Recommended Systems

a. Heating System
   1) Remove existing unit and provide a gas-fired rooftop heating and ventilating unit and associated distribution air ductwork.

b. Alley Heating
   1) Replace propeller unit heater with gas-fired propeller unit heater at end of bowling alley.

c. Toilet Heating
   1) Add electric heating in toilets and entry.

d. Ventilation
   1) Estimated 500 cubic feet per minute required for ventilation.

e. Heat Media
   1) Heating media provided propane tank located outside of building with associated piping to propeller unit heater and roof top unit.

f. Toilet Exhaust
   1) New toilet exhaust systems.

g. Domestic Hot Water
   1) Refer to plumbing for domestic hot water services.

3. Miscellaneous:

a. No central air conditioning is scheduled for this building. However, new rooftop unit could be provided with electric cooling with direct expansion coil.

b. Estimated building heating requirements with ventilation is 170 MBH.

c. Studio space, central museum-type environmental conditions are not provided.

d. Studio space same recommendation as bowling alley, and additional electric reheat coils for individual spaces.

e. Refer to supplemental section Sustainable Passive Solar and Wind Energy Technologies.

B. PLUMBING

1. Existing Conditions

a. Plumbing Fixtures
   1) Men's
      a) (1) Water closet, floor mounted, flush valve
      b) (1) Counter mounted lavatory in cabinet
      c) (1) Floor drain
   2) Women's
      a) (1) Water Closet, floor mounted, flush valve
      b) (1) Counter mounted lavatory in cabinet
      c) (1) Floor drain
   3) (1) Demolished electric water closet

b. Water Service
   1) Not found. Assume the service enters within the toilet room wet wall from below slab on grade.

c. Water Heating
   1) None found

d. Domestic Water Distribution
   1) Hot and cold water distribution is all within the toilet room wet wall.

e. Sanitary Distribution
   1) All existing sanitary is below floor slab.

f. Miscellaneous (Beyond Assumptions)
   1) All plumbing fixtures (except lavatories) were in failed condition. However, pending results of careful demolition, the two counter mounted lavatories may be refurbished and re-used at another location with new waste, trim and faucets.
   2) The location of the toilet rooms, pending AMERICANS WITH DISABILITIES ACT review, suits the proposed possible uses. At a minimum, the existing buried underground sanitary could be tested to determine its present integrity. However, the small concentration floor area would be demolished to install the new water service. Therefore the plumbing cost will include new buried sanitary piping and 4-inch service.
   3) Exterior wall hydrants were not present on this building.
   4) An existing storm drainage system for the flat roof was not verified.

2. Recommendations

a. Plumbing Fixtures
   1) 10 Men (Shop)
      a) (1) water closet
      b) (1) lavatory
      c) (1) shower (optional per tenant)
   2) 10 Women (Shop)
      a) (1) water closet
      b) (1) lavatory
      c) (1) shower (optional per tenant)
   3) 5 Men (Bowling)
      a) (1) water closet
      b) (1) lavatory
   4) 5 Women (Bowling)
      a) (1) water closet
      b) (1) lavatory
   5) General Building (for either use)
      a) (1) drinking fountain
      b) (1) janitor's sink
      c) (3) exterior wall hydrants
      d) (1) mechanical room floor drain
      e) (1) mechanical room hose bibb

b. Water Service
   1) A new 1¼-inch service would be required to accommodate the proposed fixtures for both uses. The new service would run below the slab and rise up within the janitor's closet.

c. Water Heating
   1) Studio Space
      a) If we assume that the optional showers would be installed as a tenant fit-up, the recommended base building water heater would be a small 10-gallon electric storage heater with a low recovery electric input. The heater would be located on a shelf within the janitor's closet (assume close to the toilet rooms). The showers along with a gas fired storage water heater would all be provided by the tenant.

2) Bowling Space
   a) The water heater would be the same as the studio base building heater.

d. Domestic Water Distribution
   1) New hot and cold water piping would run primarily within partitions between the janitor's closet and the toilet room wet walls. Branch cold water would run above the ceiling and drop in exterior partitions to exterior wall hydrants.

e. Sanitary Distribution
   1) A new 4-inch sanitary service would be required to accommodate the proposed fixtures for either proposed use. The piping would run buried below the slab and within the partitions. A new 4-inch vent would collect the vents within the partitions and extend through the roof above the toilet areas.

f. Propane System
   1) A single bottle point-of-use system would be installed by a supplier to accommodate the building heating system and if provided by the tenant, a storage type water heater.
   2) A new gas main will follow domestic water route to the boiler room.

g. Miscellaneous
   1) The plumbing costs will include cutting and patching the slab to remove the existing sanitary piping and accommodate the new proposed fixtures.
   2) Regardless of the presence of an existing roof drainage system, the new roof should be fit-up with a new storm drainage system. The plumbing costs will include a new storm water system for this building. The system would consist of two 4-inch roof drains with leaders and a new 5-inch storm exit main to the site system.
   3) Other than typical notes on water conservation, additional sustainability options are not available.

C. FIRE PROTECTION

1. Recommendations

a. None required by code. However, pending the tenant, or building occupancy, an automatic sprinkler system could be installed by the tenant during the fit-up. An automatic sprinkler system installation would also help to reduce code requirements such as fire separations, exiting, et cetera

D. ELECTRICAL

1. Existing Conditions:

a. Building Electric Service:
   1) 100 ampere, 120/240 volts, single phase, 3-wire, overhead service drop from pole A-20/N-1, to a Square D, 100 ampere load center with main circuit breaker and 20 poles with branch circuit breakers. Panel is in poor condition. Service has been disconnected.

b. Fire Alarm System:
   1) None.

c. Lighting:
   1) Fixtures are incandescent porcelain sockets with bare A-lamps. Fixtures are in poor condition..

d. Emergency Lighting:
   1) None.
   2) Exit signs are incandescent and are in poor condition.

e. Exterior Lighting:
   1) None.

f. Wiring Devices:
   1) Grounding type receptacles, color: brown. There are very few in the building. Devices and coverplates are in fair to poor condition.

g. Telephone System:
   1) System has been disconnected. Interior wiring is in poor condition.

2. Recommendations:

a. All systems are in fair to poor condition and must be replaced for the building to be habitable for any use. See Part III Typical Mechanical, Electrical, Fire Protection and Plumbing Items.

b. Refer to "Sustainability Supplement" section.

We have listed in Table 1 the location and estimated quantity, by square foot (sf), linear foot (lf), or other appropriate unit, of each type of ACBM identified at the site. We have also provided asbestos location drawings in Appendix B.

TABLE 1. • List Of Materials Testing Positive For Asbestos

Building 15 Bowling Alley, Truro Air Base, North Truro, Massachusetts

Type of Material	Location	Quantity
Tan 9"x 9" floor tile overlying tan 9"x 9" floor tile	Front alley area	300 sf
Green 9"x 9" floor tile	Foyer	35 sf
Green 12"x12" floor tile and associated mastic adhesive	Office area	120 sf
Black mastic and associated tan 12"x12" floor tiles	Men's and Ladies' room	80 sf
Gray transite panel	Wall outside Men's room in alley area	2 sf
Black asphalt roof flashing	Where foyer roof meets main building and around roof protrusions	50 sf

In Table 2, all materials that tested negative for asbestos are listed, including the locations where these materials were observed and the corresponding bulk sample reference number(s).

TABLE 2. • List Of Materials Testing Negative For Asbestos

Building 15 Bowling Alley, Truro Air Base, North Truro, Massachusetts

Type of material	Location(s) observed	Sample number(s)
Off white 2'x2' ceiling tiles	Men's and Ladies' room	BA-01A
Black mastic adhesive underlying tan 9"x 9" floor tile	Front alley area	BA-04A
Black mastic adhesive underlying green 9"x 9" floor tile	Front alley area	BA-06A
Brown expansion joint caulking	Along wall at floor level in alley area	BA-07A
White gypsum wallboard	Throughout	BA-08A, BA-08B, BA-08C
White joint compound associated with gypsum wallboard	Throughout	BA-09A, BA-09B, BA-09C
Tan 12"x12" floor tile (Floor tile must be treated as ACM due to cross-contamination due to mastic adhesive)	Men's and Ladies' bathroom	BA-12A
Brown vibration damper cloth	Connecting duct work at front of alley	BA-14A
Tan mastic adhesive associated with baseboard in office area	Main roof	BA-15A
Black asphalt roof material	Main roof core sample	BA-16A

2.0 Conclusions and Recommendations

On the basis of our findings, we offer the following conclusions and recommendations:

1. Only nonfriable ACBM were identified at the site. Should the building be renovated or demolished, removal of the ACBM will be necessary. Abatement of all nonfriable ACBM that will be made friable by demolition activities must be performed before building demolition. This work should be conducted by a licensed Asbestos Abatement Contractor in accordance with a project design prepared by a certified Abatement Project Designer.
2. The tan 12"x12" floor tile in the Ladies' and Men's bathroom must be treated as ACM due to cross-contamination by associated mastic adhesive.
3. Asphalt roof materials containing asbestos may be left in place during demolition if they meet all conditions and guidelines associated with the Massachusetts Department of Environmental Protection (MA DEP) Bureau of Waste Prevention Policy #BWP-96-012. All demolition involving these materials must comply with 310 CMR 7.09 (3) and (4) (Dust, Odor, Construction, Demolition). Asphalt roof materials meeting the condition of this Policy may also be disposed of in a landfill permitted by the DEP to accept solid waste in accordance with the Solid Waste Management Facility Regulations 310 CMR 19.061(6)(b)3. If these materials are in a deteriorated condition prior to beginning renovation/demolition operations, then 310 CMR 7.15 asbestos controls shall be complied with including notification to the DEP. In addition, these materials must be disposed in a landfill that has obtained a special waste permit to accept asbestos containing wastes, in accordance with 310 CMR 19.06 "special Waste."
4. If any suspect ACBM are identified at a later date that are not addressed in this inspection report, they should be assumed to be ACBM unless appropriate sampling and analysis demonstrates otherwise.
5. Develop a site-specific operations and maintenance (O&M) program for properly maintaining ACBM that will remain in place. Such a program would include a site-specific O&M plan, training of workers who may impact ACBM, periodic inspection of locations where ACM is present, and other applicable guidelines and procedures.

VHB

XRF Field Testing Results

Site Access: Yes
Demo Permitted?: Yes
Project# 06780
Location: Building #15

Date 11/3/99
Page 1 of 1
Project Name: N. Truro AFS
Inspector: TMD

Location	Surface Tested	Substrate	Concentration (mg/cm^2)	Estimated Quantity*
Men's Room	White door	Wood	0.1	
Foyer	Tan wall	Block	< 0.1	
	Tan door to exterior	Wood	< 0.1	
	Tan interior door	Metal	< 0.1	
Women's Room	Tan door	SR	0.1	
Office	Tan wall	SR	< 0.1	
Bowling Lanes	Tan wall	Block	0.1	
	Tan Wall	SR	< 0.1	
	Orange bowling gutters	**Wood**	**3.2**	**125 SF**
	Brown bowling gutter dividers	Wood	0.1	
Pin Are	Blue wall	Block	< 0.1	
Exterior	Tan wall brown upper trim	Wood	< 0.1	
	Brown upper flashing	Metal	< 0.1	
	Red door	Metal	< 0.1	

*LBP components only. Limit of detection of NITON XRF is **< 0.1 mg/cm²**) SR=Sheet Rock Block=Cinder Block SF=Square Feet

VHB **Oil and Hazardous Materials (OHM) Inventory**

Project: Former Air Force Station **Project # 06780**
Location: North Truro, MA

Location	Waste Type	Container Type	Volume of Conte	Quantity	Comments
Building #15					
	Mercury	Fluoroscent lights		34	4 foot
	PCBs	Light ballasts		17	
	Mercury	Thermostat ampule		1	Office area